

MARINE TRICLADIDA FROM MACQUARIE ISLAND.

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INTRODUCTION.

The Triclad material examined in this paper was sent to me by the Antarctic Division, Department of External Affairs, Melbourne, (A.N.A.R.E.). The material includes specimens from collections made in 1948, 1949 and 1950 from Macquarie Island.

Order: Tricladida.

Section: Maricola.

Family: *Procerodidae*.

Sub-Family: *Procerodinae*.

1. *Procerodes wandeli* Hallez (Figs. 1 and 2).

30/XI/48 R.K. Nat. Mus. No. G1225. Littoral rock pools. 5 specimens.

The specimens examined correspond to those described by Hallez from Wandes Island, Moureau Island, &c. The upper surface is pigmented with a darker pigment in a pattern laterally (Fig. 1) or it may be uniformly pigmented with a lighter patch at the anterior end. Hallez points out that the pigmentation varies in specimens collected from different places. There are no lugs. The reproductive system corresponds to the description given by Wilhelmi 1909, except that the penis is more finger shaped than cone shaped. There are three parts to the penis, a basal one distinguished by strong circular muscles, a central one with a secretory reservoir and an apical part with an ejaculatory duct. The ovovitelline ducts are ventral and join posteriorly to form a common duct which enters the top of the vagina, from which point the bursa canal runs forwards to enter the bursa copulatrix which lies dorsal to the tip of the penis (Fig. 2).

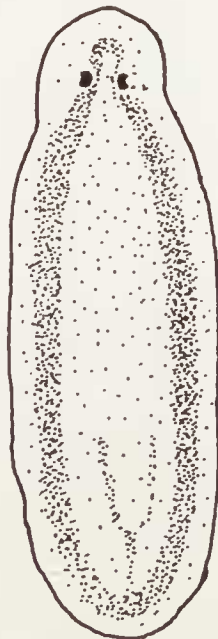


Fig. 1. *Procerodes wandeli*.

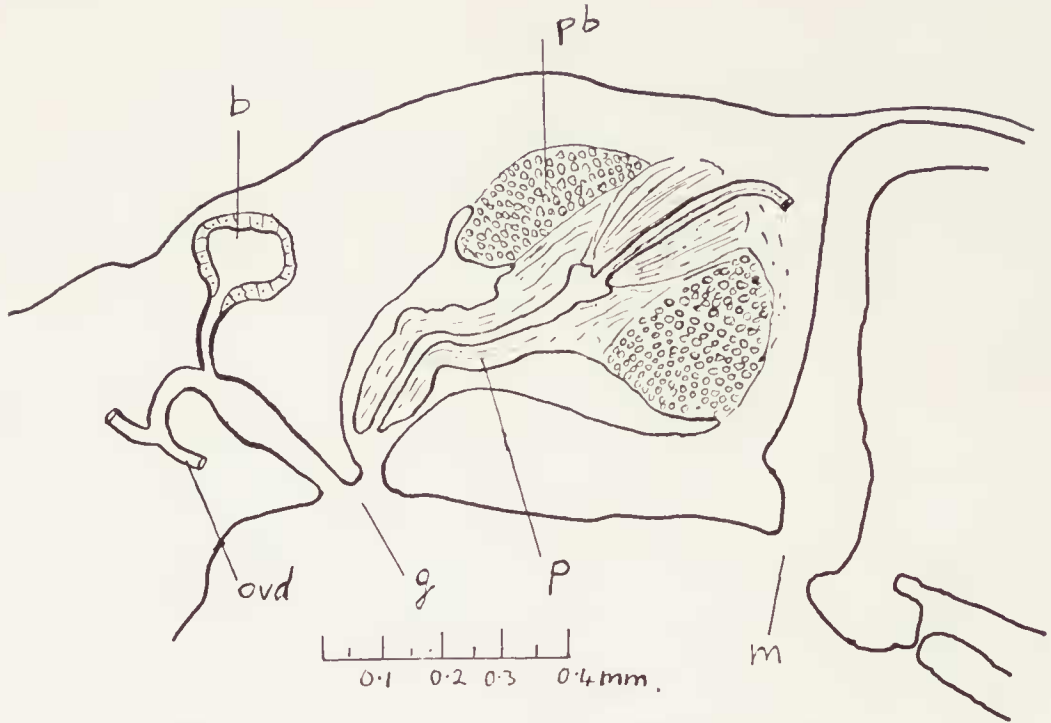


Fig. 2. *P. wandeli*. Longitudinal sagittal section through the genital region.

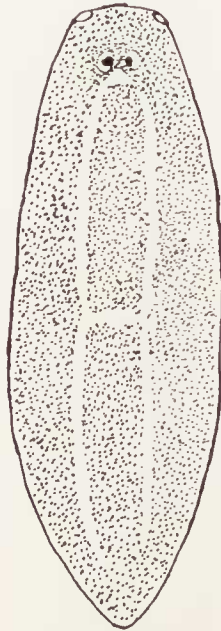


Fig. 3. *P. hallezi*.

2. *Procerodes hallezi* (Böhmg) (Figs. 3 and 4).

1. MI/49/T6. 12.2.50. N. M. Hayson. Nat. Mus. No. G.1226. From lithothamnion-encrusted pool on reef, Buckles Bay. 6 specimens.

2. MI/49/T1. 29.4.49. Nat. Mus. No. G1227. From weed washings in reef pool, Buckles Bay.

5-6 mm. long and 1.5-2 mm. wide. The upper side is dark grey with light patches between the eyes and above the pharynx and two parallel light lines running the length of the body. The genital apparatus corresponds to the description given by Marcus (1954). The testes are ventral, follicles numerous. They extend from just behind the ovary to level with the posterior end of the genital apparatus, that is, about the level of the bursa copulatrix. (More extensive than described by Westblad.) The genital apparatus is similar to the description given by Marcus. There is no vesicula seminalis. The vasa deferentia lie side by side in the muscular portion of the penis bulb.

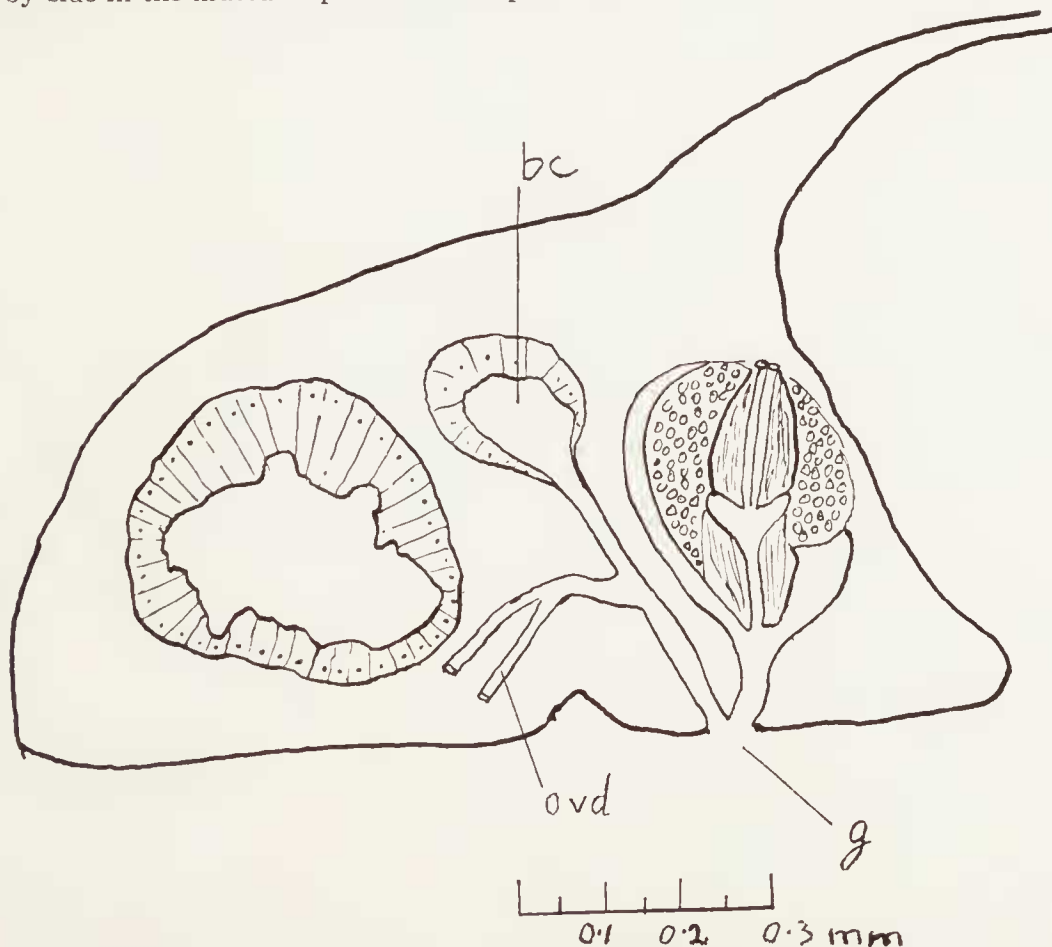


Fig. 4. *P. hallezi*. Longitudinal sagittal section through the genital region.

3. *Procerodes ohlini* (Bergendahl 1899).

MI/49/T3. 26.1.50. N. M. Hayson. Nat. Mus. No. G1228. Under rocks, shallow water. Aerial cove.

The dorsal side is dark grey with two light streaks down the length of the body. Ventral side pale grey. Size 8 mm. x 2.5 mm. The anatomical structure agrees with the description of this species given by Wilhelmi 1909.

4. *Procerodes variabilis* (Böhmg 1902, 1906).

MI/49/T2. 26.1.50. N. M. Hayson. Nat. Mus. No. G1229. Under rocks, shallow water. Aerial cove; 2 specimens.

2.1.49. Nat. Mus. No. G1230. Rock pools. R. Kenny. 1 specimen.

Pale brown in colour with very fine mottling, slightly paler underside. Eyes very small. Length 5 mm. Width 1.5 mm. The size and shape of the specimens corresponds to that of *P. variabilis* Böhmg (1902, 1906). The copulatory apparatus is similar to that described in Wilhelmi 1908 and also by Westblad 1951. The external appearance seems to be different, this specimen being pale brown whereas the one described by Böhmg was white.

Family: Bdellouridae.

1. *Palombiella macquari* n. sp. (Figs. 5, 6, 7, 8, 9, 10, and 11.)

MI/49/T3. 26.1.50. N. M. Hayson. Nat. Mus. No. G.1220. Holotype. Under rocks, shallow water. Aerial cove. There was one specimen only, well preserved, 3.5 mm. long and 1.5 mm. wide.

27/V/48 R.K. Nat. Mus. No. G1222. Fixed in formalin. Rock pools. The specimens were faded and very curled. Tissues not very well preserved.

2/1/49 R.K. Nat. Mus. No. G1223. Fixed in formalin. Rock pools. 2 specimens, not very well preserved. 4 mm. x 1 mm.

28/12/48 R.K. Nat. Mus. No. G1221. Paratypes. Fixed in formalin. Rock pools. Garden cove. Eighteen specimens, not very well preserved but better than the two preceding collections.

The description of the new species is based mainly on collections MI/49/T3 and 28/12/48 which were better preserved than the others. The size ranged from 3.5 mm. x 1.5 mm. to 7 mm. x 3 mm. The upper surface of the worm is uniformly greyish with white patches above the pharynx and above the genital region. Also white patches around the pigmented eyes. Dark grey to almost black region in front of the eyes. (See Fig. 5.)

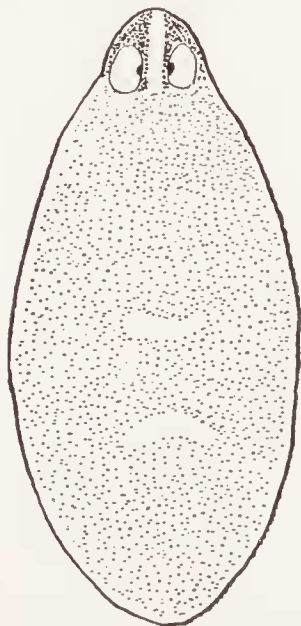


Fig. 5. *Palombiella macquari* n.sp.

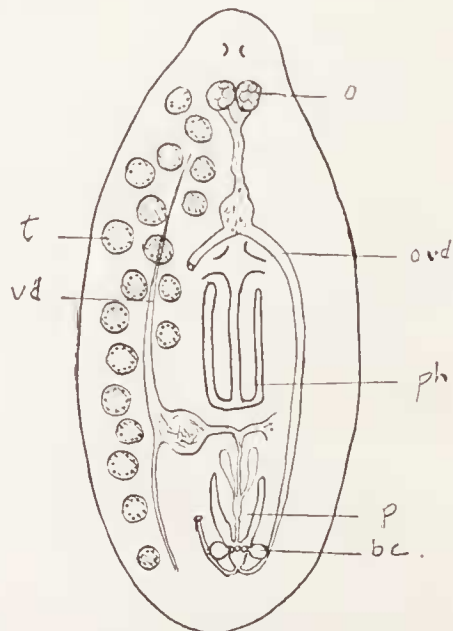


Fig. 6. *P. macquari*. Diagrams showing the reproductive system.

The gut is of the typical triclad arrangement and there is an anterior caecum lying in front of the brain and eyes.

The ovaries lie adjacent to one another and alongside the brain (Figs. 6 and 9). The short ducts running from each ovary join to form a large common ovovitelline duct in the mid-line. This duct then bifurcates, a branch running on either side of the pharynx. The ducts continue posteriorly and open into the small bursae by means of a short, narrow duct which is the reduced ductus spermaticus (Westblad, 1951). (Figs. 10 and 11.) The bursae appears at first to be just a continuation of the ovovitelline ducts as the lumen is only a little larger. However, the cells lining them are more numerous and different from those of the ovovitelline ducts, also there is a layer of circular muscles around the bursae. The bursae open by vaginal pores, one on either side of the genital pore and adjacent to it (Fig. 6). The ovovitelline ducts continue posteriorly to open into the female atrium or vagina (Figs. 6 and 11).

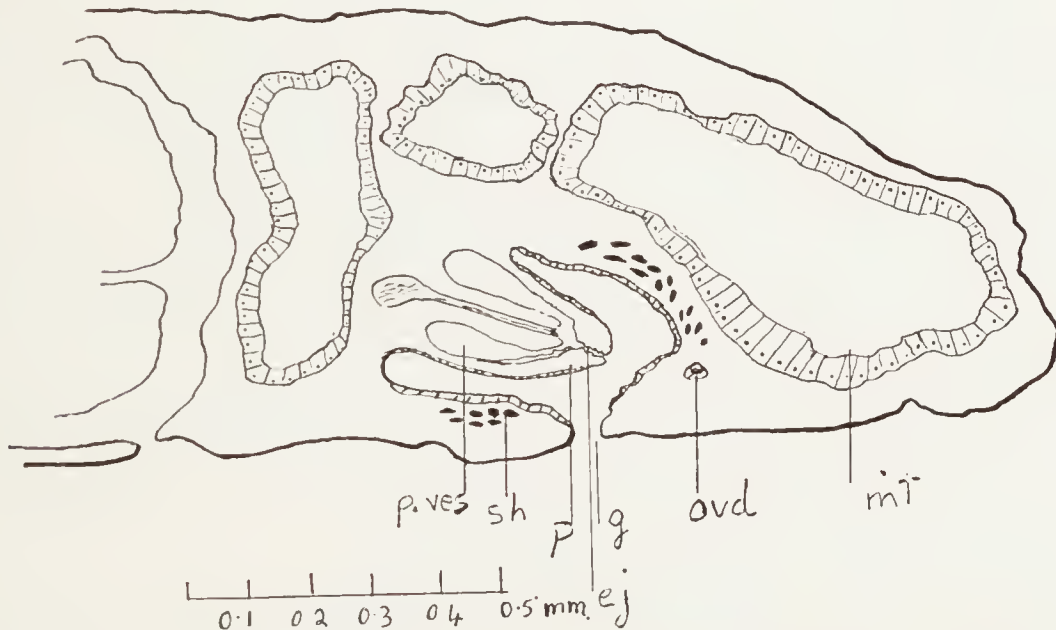


Fig. 7. *P. macquari*. Longitudinal sagittal section through the genital region.

The testes are dorsal and numerous, usually eighteen or more follicles on each side. They extend from the ovary to the region of the genital apparatus. The vasa deferentia swell out to form large sacs which lie on either side of the body. They then run dorsally into the penis bulb as separate ducts, which join towards the base of the bulb to form the common ejaculatory duct. There are large spaces in the penis bulb which also open into the ejaculatory duct. (These may be glandular, though the material was not well enough preserved to distinguish gland cells.) (Fig. 7.)

The arrangement of the bursa (receptaculum seminis), ductus spermaticus and the posterior portion of the ovovitelline duct is very similar to that described by Westblad, 1951, for *Palombiella stephensoni*. The receptacula seminis (bursae cupolatrices) are vesicular and connected with the oviducts, and the testes are numerous. The above described specimen is therefore placed in the genus

Palombiella. It differs from *P. stephensoni* in several important respects: the ovovitelline ducts are united anterior to the pharynx, the testes are dorsal and the ductus spermaticus is extremely short. The specimens have therefore been placed in a new species.

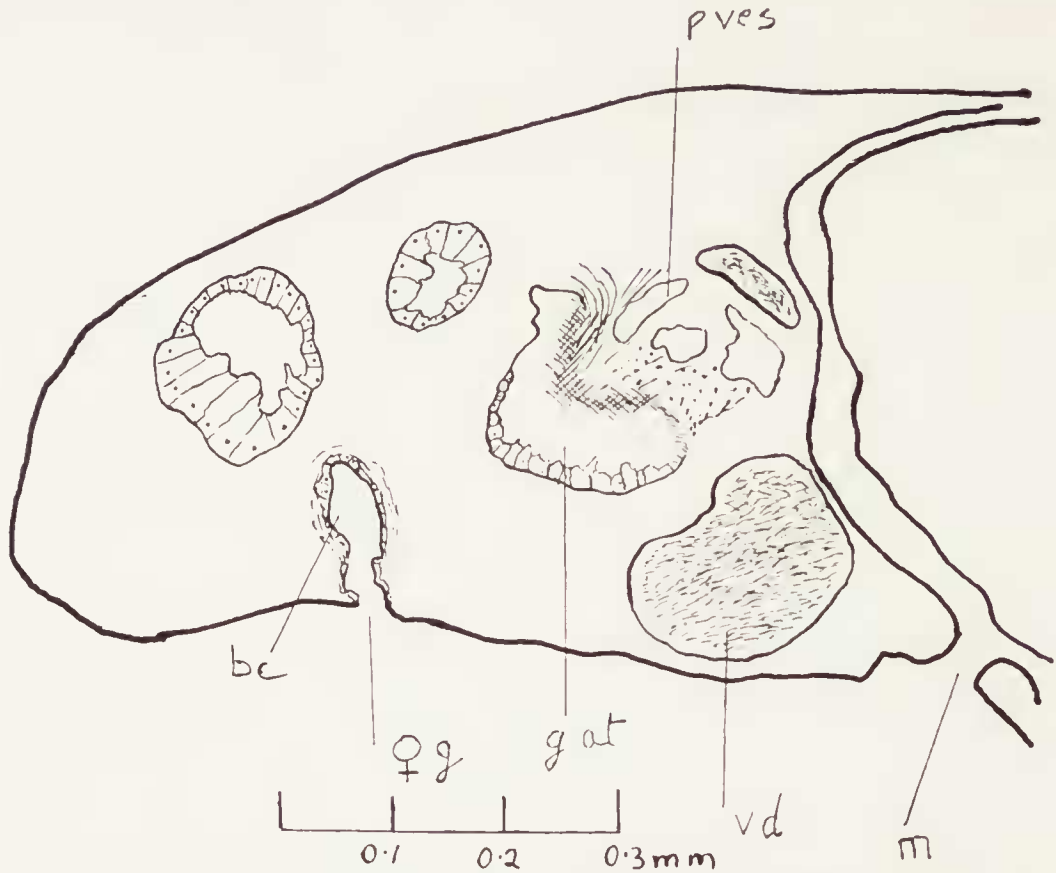


Fig. 8. *P. macquari*. Longitudinal sagittal section through the female genital pore.

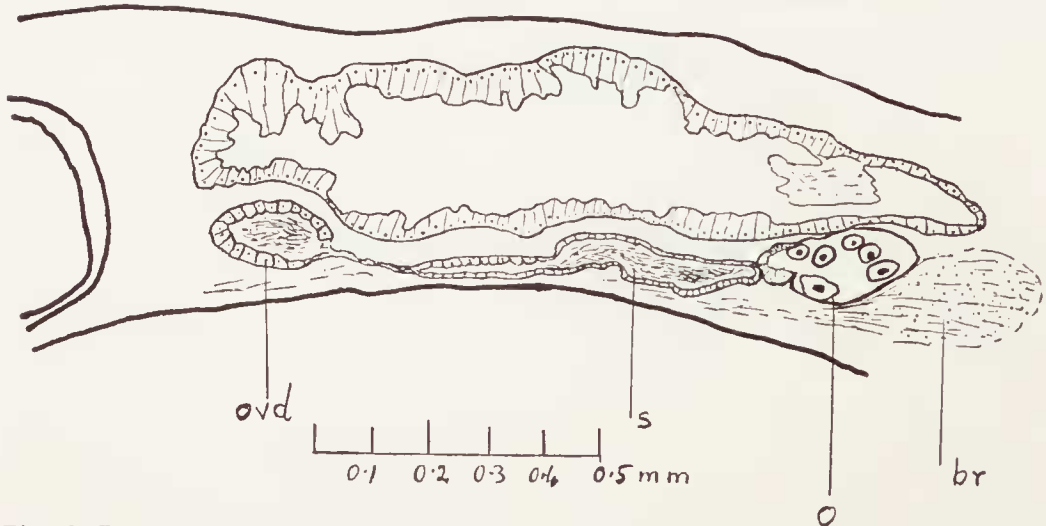


Fig. 9. *P. macquari*. Longitudinal sagittal section through the common ovovitelline duct anterior to the pharynx.

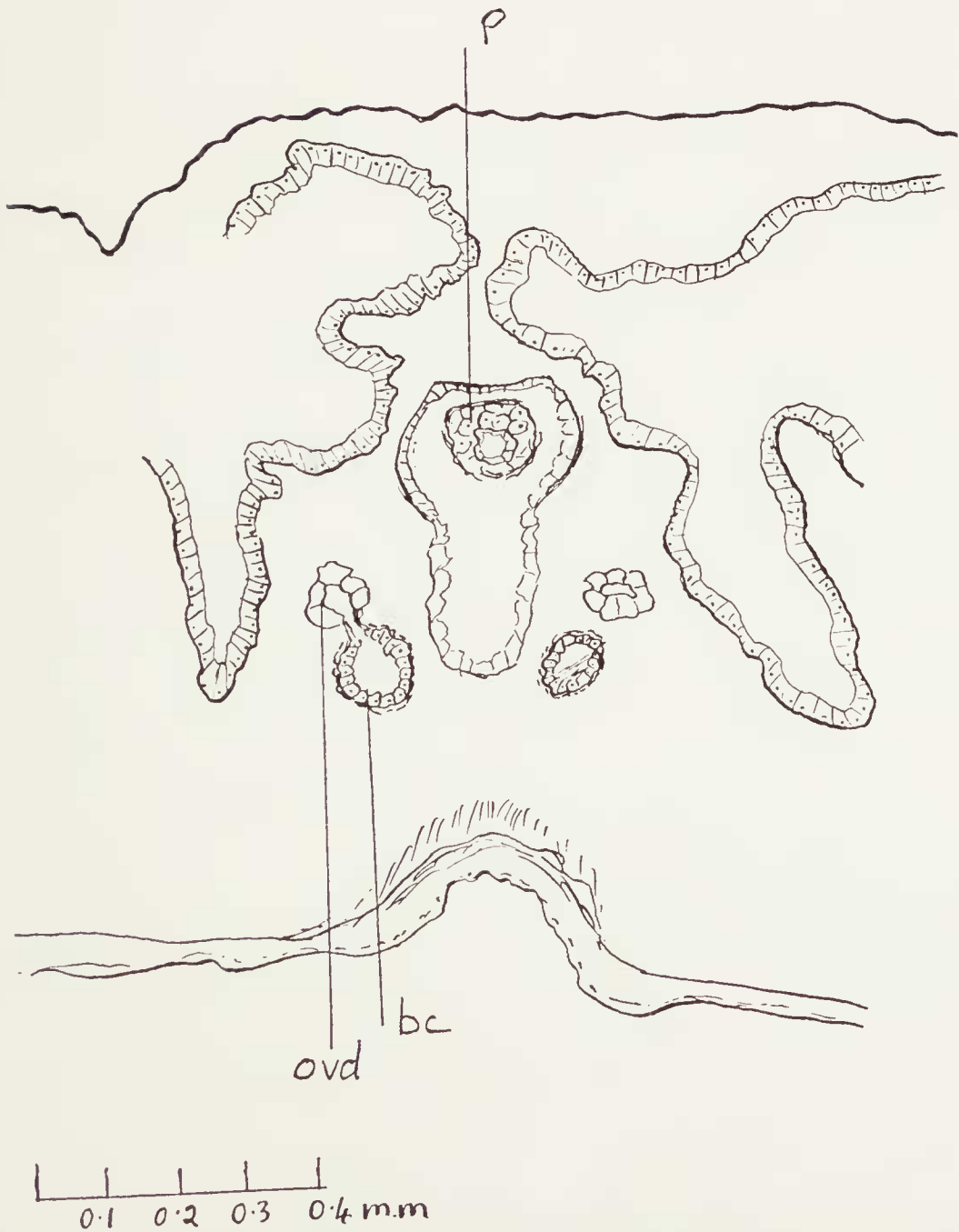


Fig. 10. *P. macquari*. T.S. genital region to show the opening of the ovovitteline duct into the bursa copulatrix.

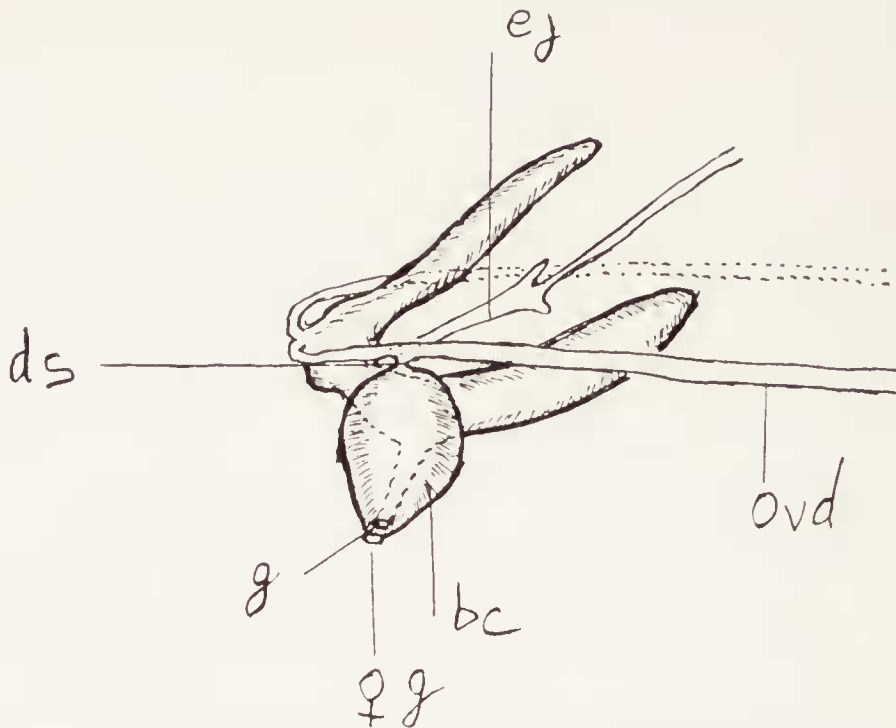


Fig. 11. *P. macquari*. Diagram of the copulatory organs.

2. *Palombiella stevensoni* (Palombi).

MI/49/T7. Nat. Mus. No. G1224. Intertidal zone, reef, southern end Hasselborough Bay. 1 specimen. 3 mm. long.

The upper side is dark grey with irregular patches of pale cream (possibly white in life). Underside pale. Black band across the front end with bands around the eyes. The specimen was not fully mature but the genital pores, of which there were three, were just open. The size, shape and colouration resembles that of *Palombiella stevensoni* as also does the shape and position of the penis. The receptacula seminales were small and immature so it was uncertain whether they were tube shaped or globular. The testes, ducti, spermatici and oviducts could not be identified, so that it was hard to distinguish whether the specimen belonged to the genus *Palombiella* or *Synsiphonium*.

Ciliate protozoa were observed in the pharyngeal cavity and in the intestine similar to those present in *Palombiella stephensoni* described by Westblad (1951).

3. *Synsiphonium liouvilli* Halley.

29/8/49. A.N.A.R.E. Coll. No. 258. Nat. Mus. No. G1231. Under lower littoral rocks, Atlas Cove, Heard Island.

This specimen corresponds exactly to the revised description of *S. liouvilli* given by Westblad (1952).

Station I.A.B. 27/1/49 R.K. Nat. Mus. No. G1232. Bare zone fixed in formalin.

There were three specimens only. One was badly damaged and the other two were immature, so it was not possible to identify them.

30.1.50. N. M. Hayson. MI/49/T4. Nat. Mus. No. G1233. Under rocks water's edge, Buckles Bay. Narcotised with menthol, fixed 70 per cent. Alcohol.

There were five specimens but unfortunately they had dried up by the time they had reached me. An attempt was made to soften them and section them but the results were unsatisfactory so identification was not possible.

MI/49/T5. 9.2.50. N. M. Hayson. Nat. Mus. No. G1234.

Under rocks Lithothamnion zone, reef, Buckles Bay. Fixed in 70 per cent. Alcohol. Length 3.5 mm. Colour cream with a reddish patch on the mid-dorsal surface. Two eyes, pigmented. There was one specimen only which was sectioned. A rhabdocoel.

Acanthocephala—*Echinorhynchus* spp.

MI/49/P39. 2.2.50. N. M. Hayson. Nat. Mus. No. G1235.

Intestinal parasites of *Notothenis macrocephala* Buckles Bay.

SUMMARY.

One new species of marine triclad, Fam: Bdellouridae, *Palombiella macquari* is described with seven text figures. Another specimen belonging to the Fam: Bdellouridae, *Synsiphonium liouvilli* is identified. This species has been described from the Antarctic, Ile Petermann (Hallez, 1912, 1913) and Tierra del Fuego (Westblad, 1952).

Four species of *Procerodes* are identified, namely, *P. wandeli*, *P. hallezi*, *P. ohlini* and *P. variabilis*. All these are widely distributed in the South American Antarctic region (Westblad, 1952).

REFERENCES.

- Böhmig, L., 1906.—Tricladen—Studien. I. Tricladida maricola. *Zeitsch. f. wiss. zool.* Bd. LXXXI.
- Hallez, Paul, 1906.—Note préliminaire sur les triclades maricoles des mers antarctique et du Cap Horn, recueillis par l'expédition charcot. *Bull. Mus. Hist. nat.*, Paris, Vol. 12, pp. 395–399.
- Hallez, Paul, 1911.—Un Bdellouride non parasite des mers antarctiques. *C.R. Ac. Sc.*, Vol. 152, p. 461–463.
- Hyman, L. H., 1944.—Marine turbellaria from the Atlantic Coast of North America. *Am. Mus. Novit.*, No. 1266, p. 1–15.
- Hyman, L. H., 1951.—*The Invertebrates*. V. 2. Platyhelminthes, &c. VII–550 p., 208 figs. New York.
- Hyman, L. H., 1954.—A new marine triclad from the Coast of California. *Am. Mus. Novitat.*, No. 1679, p. 1–5.
- Marcus, E., 1947.—Turbelarios marinhos do Brasil. *Bol. Fac. Fil. Ci. Letr. Zoologia* No. 12, pp. 99–216, + 1–21. Sao Paulo.

- Marcus, E., 1948.—Turbellaria do Brasil. *Bol. Fac. Fil. Ci. Letr. Zoologia* No. 13, pp. 111–243, t. 1–20. Sao Paulo.
- Marcus, E., 1952.—*Reports of the Lund University Chile Expedition 1948–49*. II. Turbellaria. Lund.
- Marcus, E., 1955.—South African Animal Life. *Results of the Lund University Expedition, 1950–1951*. Turbellaria. Uppsala.
- Palombi, A., 1938.—Turbellaria del Sud Africa. *Arch. Zool. Italiano*, V. 25, pp. 368–383.
- Westblad, E., 1951.—Tubellarians of Tristan da Cunha. *Res. Norweg. Scient. Exped. to Tristan da Cunha 1937–38*, No. 21, p. 1–8. Oslo.
- Westblad, E., 1952.—Turbellaria (excl. Kalyptorhynchia). *Further Zool. Res. Swed. Antarct. Exp. 1901–1903*, V. 4, N. 8, p. 1–55. Stockholm.
- Wilhelmi, J., 1909.—Tricladen. Monogr. 32. *Fauna and Flora Jolfes von Neapel*.

ABBREVIATION.

b	=	bursa copulatrix
bc	=	bursa canal
br	=	brain
ds	=	ductus spermaticus
ej	=	ejaculatory duct
g	=	genital pore
gat	=	genital atrium
int	=	intestine
m	=	mouth
o	=	ovary
ovd	=	ovo-vitelline duct (oviduct)
p	=	penis
pb	=	penis bulb
ph	=	pharynx
p.ves	=	penis bulb vesicles
s	=	sperm
sh	=	shell glands
t	=	testes
v	=	vagina.